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Sequence Stratigraphy Characterization of Exxit Oilfield, Western Offshore Niger Delta

In this study consideration is given to an integrated interpretation of well logs motifs and biostratigraphic data for sequence stratigraphic analysis of sediments penetrated in the selected three oil wells (Exxit 73, 75 and 78) within the western offshore Niger Delta. Gamma ray and resistivity logs of these wells including the biostratigraphic data, depositional environments and Niger Delta chronostratigraphic chart were used in this study. The integrated interpretation of the above data sets enables the subdivision of the stratigraphic column within the wells into sequences, system tracts and sedimentary cycles. It also allows the identification of key bounding surfaces, which are isochronous within and across the three wells. Three sequences are identified and are characterized by high stand system tracts, low stand system tracts and transgressive system tracts. They are found to be third-order sequence based on their cyclicities. These sequences have potential to serve as excellent source rock and seals, the transgressive system tract that dominate the lower portion of the stratigraphic column depict excellent seals and stratigraphic trapped rock. Sand percentage calculation shows that the maximum flooding corresponds to the major shale breaks. With the presence of a fault lines, a structural trap is speculated if Exxit 73 and 78 are drilled deeper. The depositional environment of the areas is inferred to be of deltaic shelfal - transitional type Utilizing the palynological zonation the ages of the sediment penetrated in the well range from middle - late Miocene.